


Enhanced Corrosion Protection for the H-60 Helicopter

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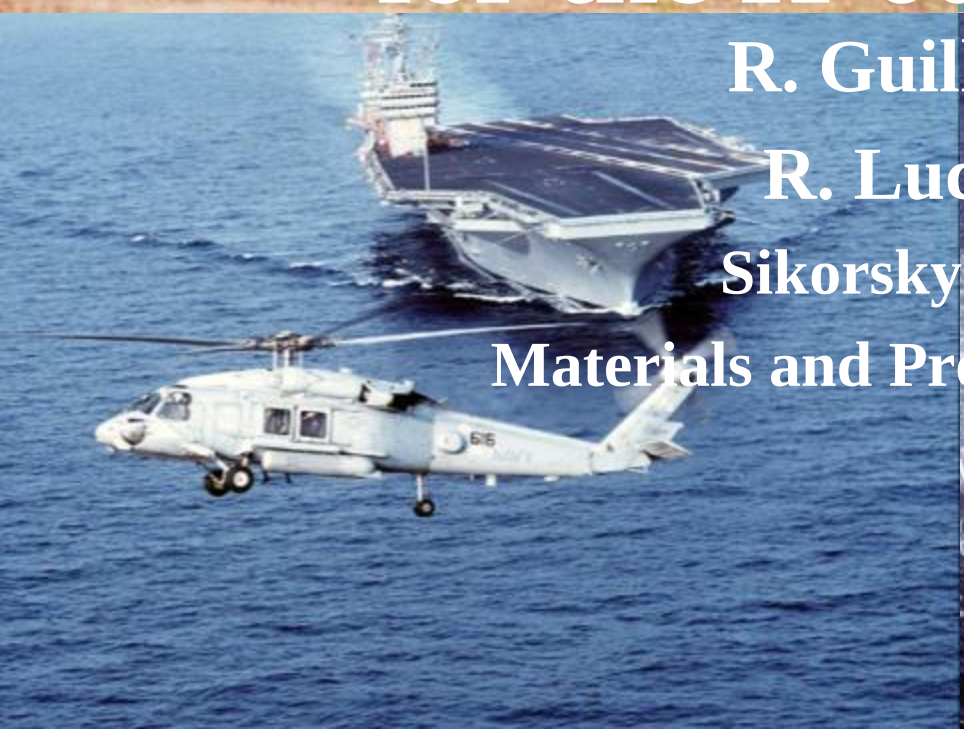


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H-60 Corrosion Performance

- DoD Corrosion Prevention and Control directives emphasize fleet readiness as well as cost and man hour reductions through “designed in” corrosion resistance
- Corrosion improvements incorporated into UH-60M and MH-60S/R

Corrosion Drivers

- Faying surfaces (mostly interior airframe)
  - Primer-only insulation between mating parts
- Hardware and fasteners
  - Dissimilar metals
- Water traps
- Antennae and electrical grounding points
  - Mounting surfaces with low resistivity requirements have minimum finishes
- Wear surfaces
  - Vibration → wear → corrosion

Design for Corrosion Prevention

Corrosion inhibitors

Material selection

Good access

Drainage and ventilation

Sealants

Water Integrity

Finishes

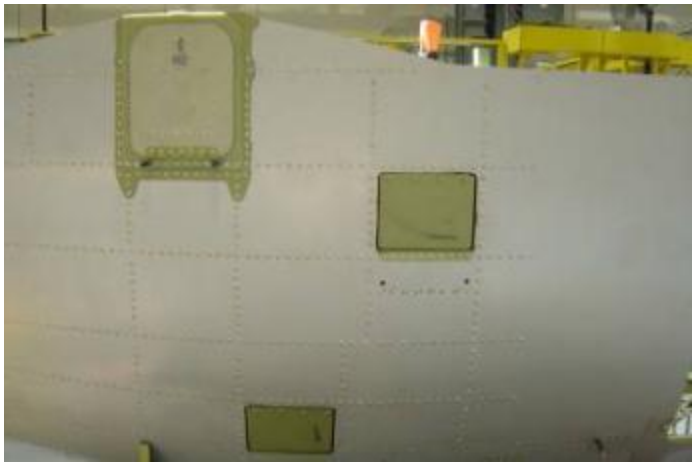
Design Features

- Multiple parts vs monolithic structure
- Minimize dissimilar metal
- Avoid crevices and water traps

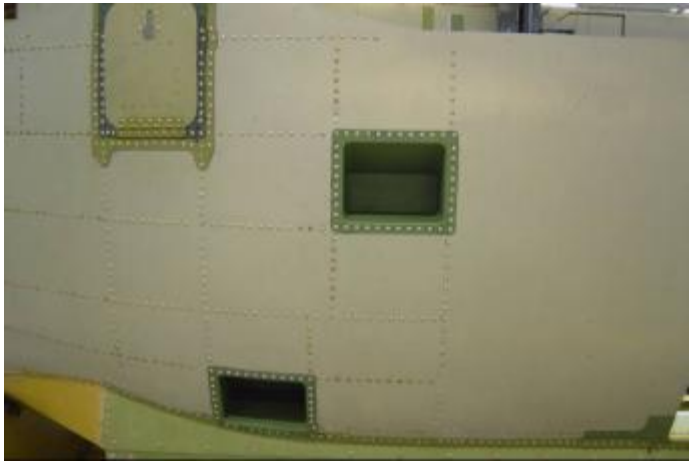
MIL-DTL-64159 Exterior Topcoat for UH-60M

- Improved Weather Resistance / UV Stability&Resistance (degradation that allows moisture to reach primer and base metal)
- Improved Flexibility (cracks in paint near rivets, faying surfaces allow moisture intrusion)

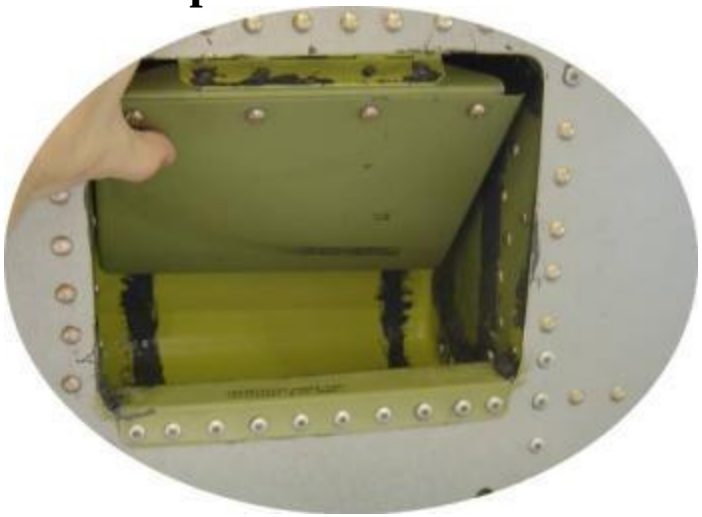
High Speed Machined Airframe Components

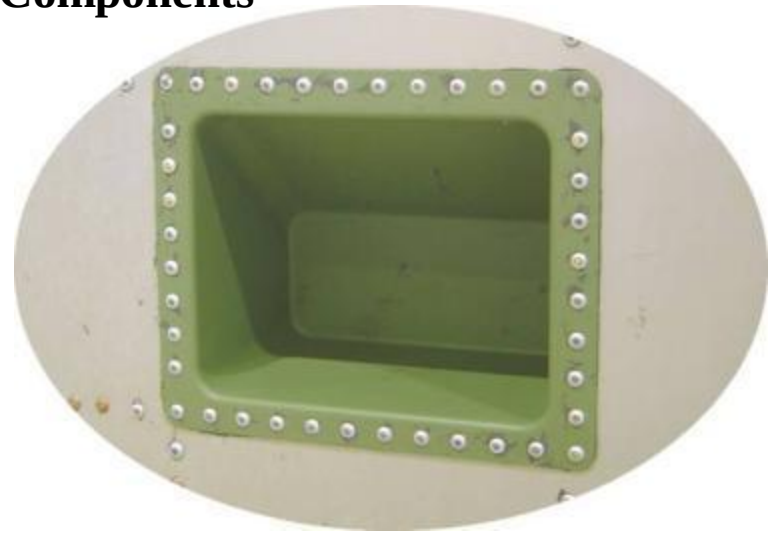


Sheet Metal Components

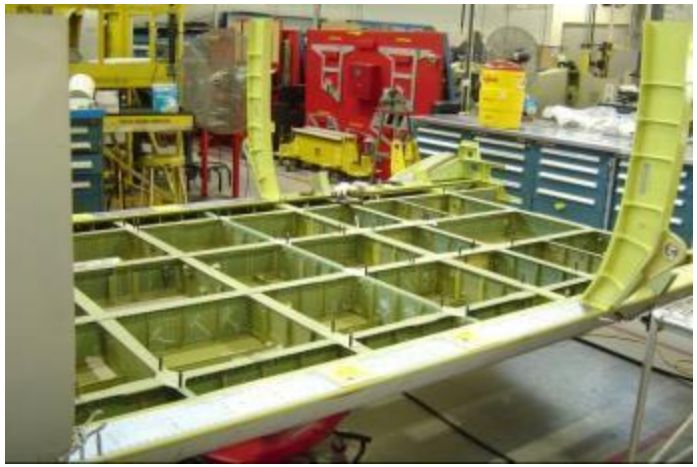


HSM Components



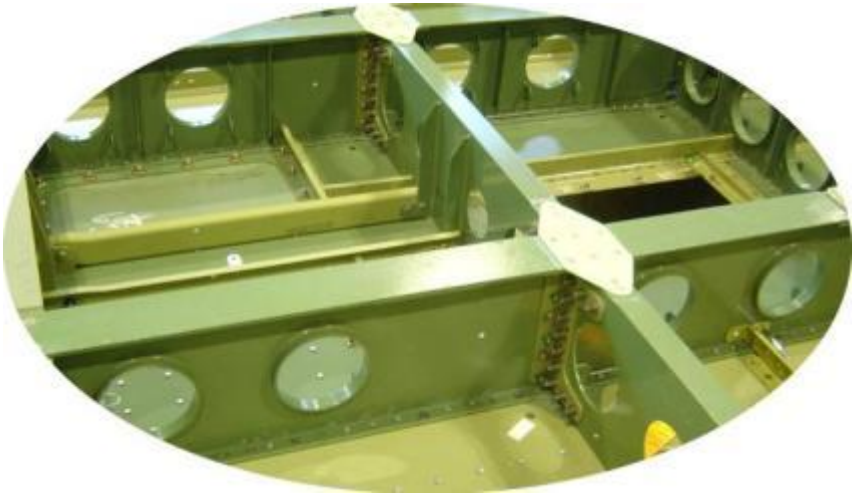


High Speed Machined Airframe Components



Sheet Metal Components

HSM Components



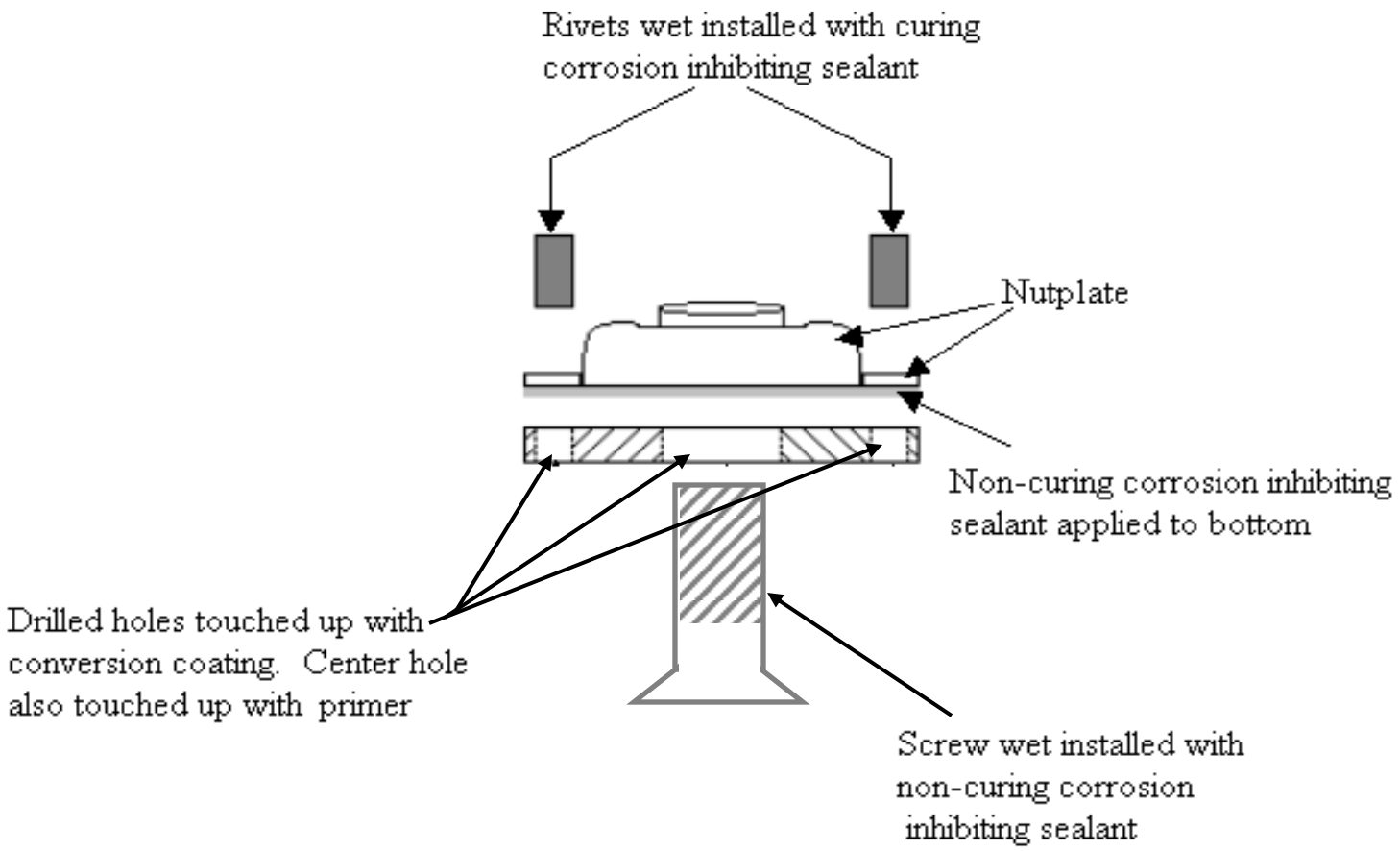
Corrosion Benefits of High Speed Machined Components

- Replaces multiple sheet metal parts
- Eliminates mating surfaces prone to crevice corrosion
- Eliminates holes prone to corrosion
- Eliminates dissimilar fasteners prone to galvanic corrosion
- Added clear polyurethane at detail level; topcoat of faying surfaces and nut plate locations
- Reduced assembly time and shop waste material
- Environmentally friendlier – reduced solvent from cleaning, reduced chromated sealant, reduced waste

Wet Installation of Interior Fasteners

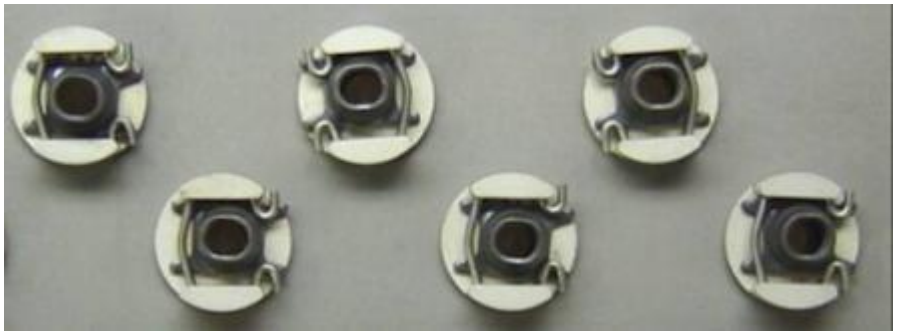
- Wet installation for low water level regions
- Removable fasteners installed with non-curing sealant
- Permanent fasteners installed with curing sealant

Added Protection for Nutplate Installation



Rivetless Nutplates

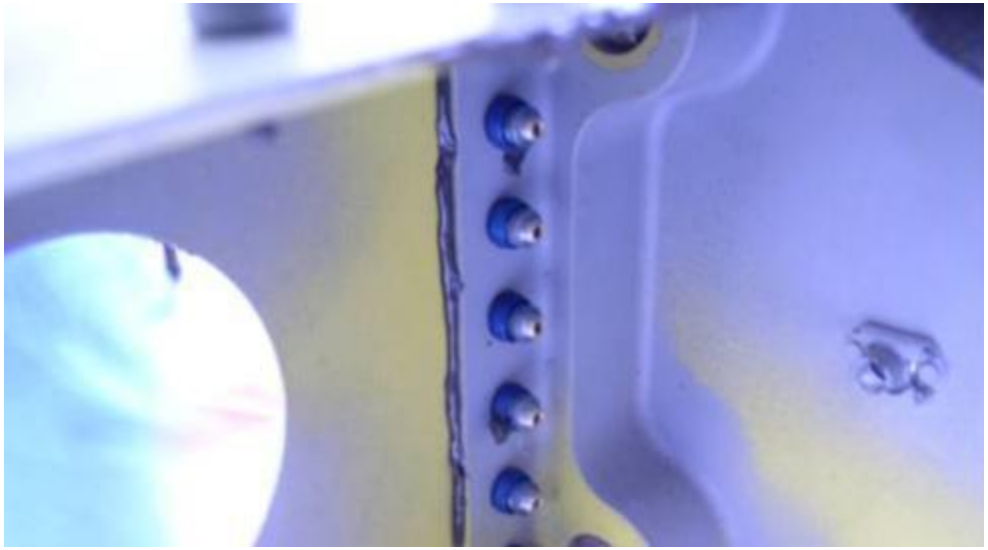
- Easier and faster installation
  - Eliminates 9 installation steps
- Improved corrosion resistance
  - Eliminates dissimilar metals
  - Eliminates two holes



- Improved fatigue life
- Meets NASM25027 torque and push out requirements
- Easier Replacement
  - Can replace threaded nut insert without removing entire nutplate

Rivetless Nutplates

Added Faying Surface Sealing



- Interior faying surfaces traditionally anodized and primed only
- Enhanced protection incorporates sealing mating surfaces with polysulfide sealant

Improved Sealing Materials

AMS 3265 Sealant

- Corrosion inhibiting
- Non-chromated
- Polysulfide base; compatible with currently used AMS-S-8802 material

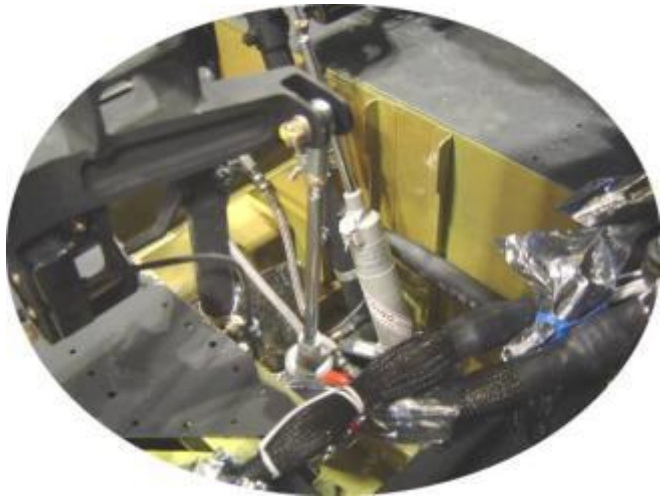
Conductive Sealant

- Corrosion inhibiting
- Non-chromated
- Nickel-fillers provide electrical conductivity
- Qualification testing underway

Fluid Fog Filming

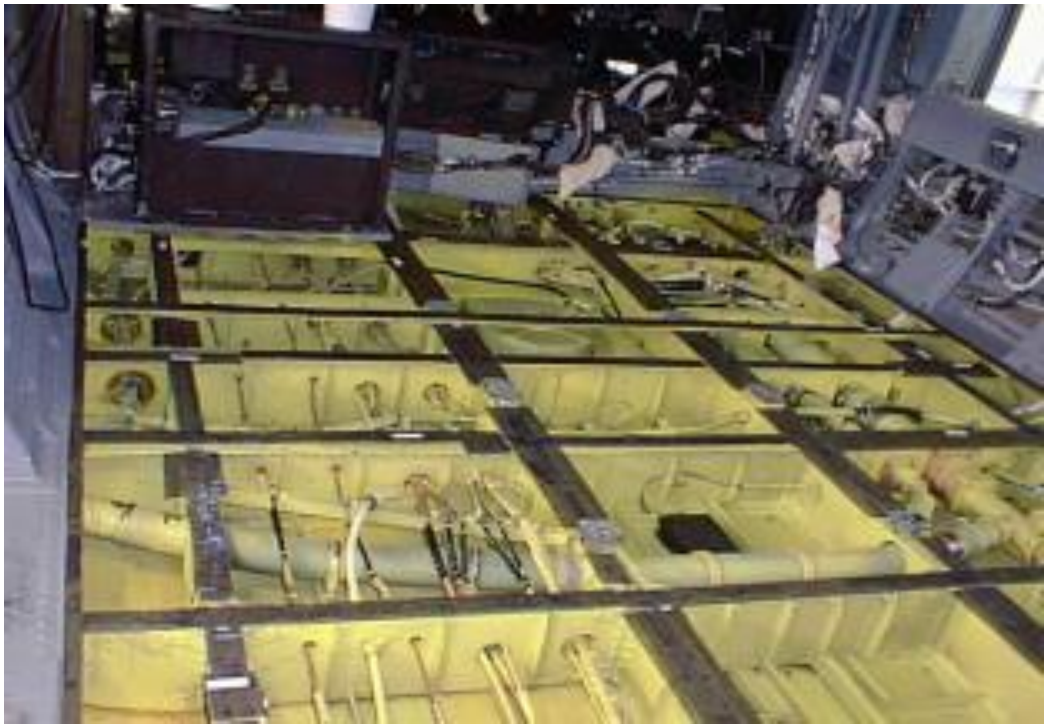
- Non aerosol, lanolin based corrosion preventative material
- Fluid film sprayed into lower tub and bilge areas of Navy aircraft
- Lanolin material wicks into crevices and displaces water

Dry-to-Touch CPC



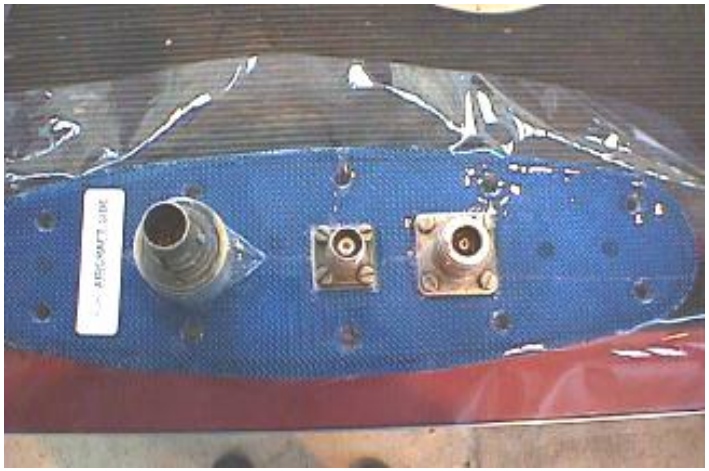
- Dry-to-touch, water displacing, corrosion preventative material
- Sprayed onto tail cone interior, lower tub, and bilge regions

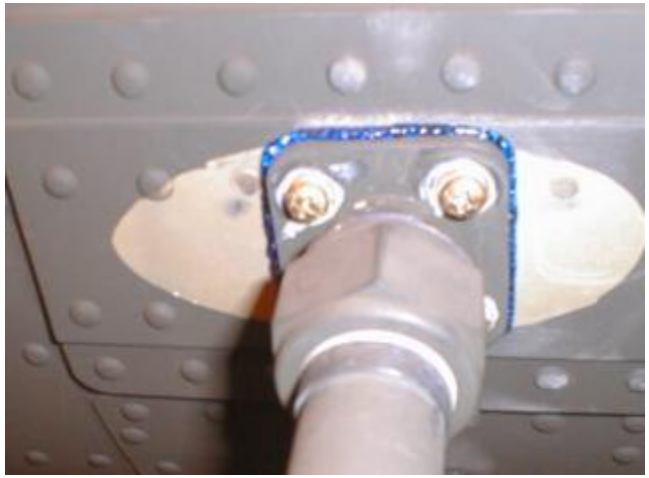
Polyurethane Gel Floor Tape



- Corrosion due to lack of "memory" in PTFE floor tape. Permanent set allows water entry when airframe flexes during flight
- Polyurethane gel floor tape, field tested by NAVAIR, has shown a significant improvement in corrosion performance for the H-60 cabin tub

Conductive Polyurethane Gel Antenna Gaskets





- Conductive polyurethane gel gaskets, field tested by NAVAIR, show significant improvement in corrosion performance
- Result is reduced maintenance and extended inspection intervals

NavalHawk Tail Drive Shaft

- Corrosion prevalent at titanium flange and aluminum tube
- Drive shaft faying surface is sealed with AMS-S-8802, but loss of adhesion can occur as the part flexes during flight
- Testing has proven that anodizing the titanium flange and using AMS 3265 corrosion inhibiting sealant will prevent corrosion

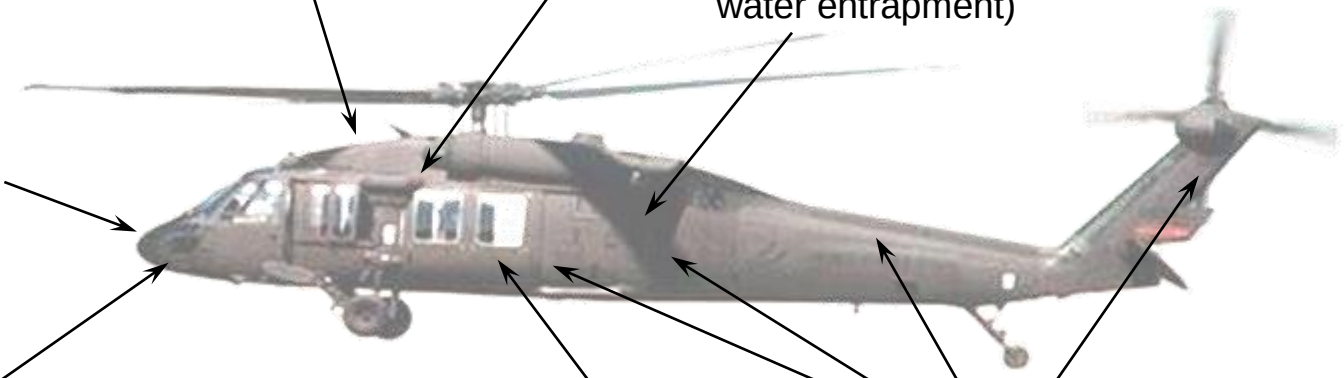
HVOF Coatings for Landing Gear Components

- Hard chrome replacement with WC-CoCr coating applied by HVOF process
- New coating provides improved corrosion performance
  - HVOF process produces dense, wear resistant coating
  - Chrome plating is inherently microcracked due to internal tensile stresses, leading to corrosion underneath the coating
- Qualification program complete, ECP in process

UH-60M Corrosion Prevention Control (CPC) Implementation

General-

- Fittings: Anodize, Prime, Clear Polyurethane at Detail Level
- Wet Installation of Fasteners
- Switch from AMS-S-8802 to Corrosion Inhibiting Sealant
- Polyurethane Antenna Gaskets



MH-60S Corrosion Prevention Control (CPC) Implementation

General-

- Fittings: Anodize, Prime, Clear Polyurethane , at detail level
- Wet Installation of Interior Fasteners
- Fay Sealing of Interior Assemblies
- Switch from AMS-S-8802 to Corrosion Inhibiting Sealant
- Polyurethane Antenna Gaskets